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October 17, 2017

Ex Parte/Via ECFS

Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *Telecommunication Relay Services and Speech to Speech services for Individuals with Hearing and Speech Disabilities,* CG Docket No. 03-123

Dear Ms. Dortch,

On October 4, 2017, Paula Boyd, Lissa Shook, Will Lewis, and Bradley Baird of Microsoft Corporation ("Microsoft"), met with Acting Bureau Chief Patrick Webre, Deputy Bureau Chief Karen Peltz Strauss, Deputy Bureau Chief and Special Advisor for Telecommunications Relay Services Eliot Greenwald, Front Office Legal Advisor Robert Aldrich, Attorney Advisor Sue Bahr, and Attorney Advisor Michael Scott of the Commission's Consumer and Governmental Affairs Bureau to demonstrate Microsoft's real-time speech recognition technology at the FCC's invitation.

During the meeting, Mr. Lewis demonstrated Microsoft Translator, a speech recognition API that transcribes real-time speech to text, by running Presentation Translator while presenting a PowerPoint deck (see Appendix). *See also* Presentation Translator, a Microsoft Garage Project, <https://translator.microsoft.com/help/presentation-translator/> (last visited Oct. 9, 2017). Mr. Lewis explained that Microsoft Translator is also available for download on mobile devices and PCs. *See* Get the mobile app, <https://translator.microsoft.com/apps/> (last visited Oct. 9, 2017).

Microsoft Translator can provide real-time transcription as well as translation into numerous languages. *See* What languages does Microsoft Translator support?, <https://www.microsoft.com/en-us/translator/languages.aspx> (last visited Oct. 9, 2017). Microsoft Translator offers robust multi-voice, multi-accent acoustic models to support a variety of voices and accents. Microsoft Translator also cleans up a variety of simple and complex speech disfluencies, such as "um"s and "uh"s, "you know"s (discourse markers), repetitions, and filler pauses as they occur, enabling the text output from the audio to more closely resemble captions. In addition, sentence segmentation is used to add sentence breaks, punctuation, and capitalization, which improves the readability of the final text output.

The current conversational word error rate for Microsoft Translator is approximately ten to fifteen percent. Microsoft researchers are pioneering advances in conversational speech recognition, and recently achieved a 5.1 percent error rate using a corpus of prerecorded conversations. See Microsoft Research Blog, *Microsoft researchers achieve new conversational speech recognition milestone*, August 20, 2017, < https://www.microsoft.com/en-us/research/blog/microsoft-researchers-achieve-new-conversational-speech-recognition-milestone/> (last visited Oct. 6, 2017). The speech model used in this research is not yet available in product, but will be used in future to improve productized speech services.

Microsoft Translator can adapt dynamically during a conversation and leverage other resources made available to it to improve accuracy. For example, in Presentation Translator for PowerPoint, Translator can "pre-read" the PowerPoint deck and add jargon or technical terms used in the deck to customize the speech model used to render captions during the presentation itself. This adaptation can catch a variety of scenario and domain specific technical vocabulary and jargon, and can be completed within 3-5 minutes. In a call scenario, accuracy could potentially be improved by having the speech model use caller names from an address book to increase the likelihood that the names of people in the conversation will be spelled correctly.

Microsoft Translator is being piloted in a number of different settings, including education. *See* Microsoft Translator for Education, < https://translator.microsoft.com/help/education/> (last visited Oct. 9, 2017).

Respectfully submitted,

/s/ Lissa Shook

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